

"as enclosed to IPER"

We claim:

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1. A process for the continuous recirculation of the propene which has not been reacted in the oxidation of propene by means of hydroperoxide to give propene oxide, said propene contains propane as saturated hydrocarbon and is present in the offgas stream formed during the oxidation, which comprises the steps (i) to
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- (i) separating the propene and propane from the offgas stream by absorption in a hydrocarbon,
- (ii) desorbing the propene and propane from the hydrocarbon, wherein the mixture of propene and propane is separated off either in liquid form in a distillation column at a pressure of from 1 to 3 bar or in gaseous form at a pressure of from 1 to 3 bar and a temperature of from 50 to 100°C in a flash evaporation,
- (iii) recirculating the propene obtained in step (ii) to the oxidation process,

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wherein the propene/propane mixture obtained after separation from the hydrocarbon is separated into propene and propane in a C₃ splitter before recirculating the propene to the oxidation process.

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2. A process as claimed in claim 1, wherein the hydrocarbon obtained after desorption of the olefin in step (ii) is recirculated to step (i).

3. A process as claimed in claim 1 or 2, wherein the hydrocarbon used is tetradecane.

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4. A process as claimed in any of claims 1 to 3, wherein the propene is absorbed at a pressure of from 3 to 6 bar and a temperature of from 5 to 35°C.

5. A process as claimed in any of claims 1 to 4, wherein the offgas stream comprises inert gases and a small amount of oxygen.

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6. A process as claimed in claim 5, wherein the offgas stream comprises nitrogen.
7. An apparatus for carrying out a process for the continuous recirculation of the propene which has not been reacted in the oxidation of propene by means of hydroperoxide to give propene oxide, said propene contains propane as saturated hydrocarbon and is present in the offgas stream formed during the oxidation, wherein the apparatus comprises at least one reactor for preparing the propene oxide, at least one absorption and desorption unit for separating off the propene and a C₃ splitter, wherein in the absorption unit propene and propane are separated off by absorption in a hydrocarbon, wherein in the desorption unit propene and propane are desorbed from the hydrocarbon and wherein in the C₃ splitter the components propene and propane are separated.
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